Advant® OCS
with Master software

Advant® *Station 100 Series*

Engineering Board

Installation Guide

3BDD 000 008R801

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This product meets the requirements specified in EMC Directive 89/336/EEC and in Low Voltage Directive 73/23/EEC.

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Summary

The Advant Station 100 Series Engineering Board is a substantial hardware part of Advant Station 100 Series Engineering Stations. Together with the host personal computer it serves as platform for various ABB Master configuration tools.

This document gives an overview of the Advant Station 100 Series Engineering Board and describes how to install it.

1 Introduction

This document describes the installation and the access to test procedures of the Advant Station 100 Series Engineering Board in an easy understandable way. Nevertheless, skills and experience are needed in upgrading a personal computer with add-in boards and in installing software. So it is recommended to commission your ABB representative to install the Advant Station 100 Series Engineering Board.

2 Advant Station 100 Series Engineering Board

Two products are available to upgrade an own PC to the functional level of Advant Station 100 Series Engineering Stations:

- Advant Station 100 Series Engineering Board – ISA
- Advant Station 100 Series Engineering Board – PCI.

Use Advant Station 100 Series Engineering Board – ISA if you plan to use the engineering board in an ISA bus based PC. Use the Advant Station 100 Series Engineering Board – PCI for a PCI bus based PC.

Both versions of engineering boards are suitable if you do not want to buy Advant Station 100 Series Engineering Stations that include the engineering software. You may want to run AMPL Control Configuration under Windows NT on an own suitable PC.

2.1 Contents of the Engineering Board – ISA

The Advant Station 100 Series Engineering Board contains

- Engineering board DSPU131 , a long ISA board
- Cables for connection to Advant Controller 70, Advant Controller 110, Advant Controller 400 Series, and MasterPiece 200
- A gender changer
- Functional Test Guide and this guide.

This product does not include engineering software.

2.2 Contents of the Engineering Board – PCI

The Advant Station 100 Series Engineering Board contains

- Engineering board PU516, a long PCI board

- Cables for connection to Advant Controller 70, Advant Controller 110, Advant Controller 400 Series, and MasterPiece 200,
- This Installation Guide.

This product does not include engineering software.

2.3 Hardware

Advant Station 100 Series Engineering Stations are high performance tools for configuration, application programming, documentation, testing, and commissioning of operator stations and controllers like
Advant Station 500 Series Operator Station (via MasterBus 300),
Advant Controller 100 Series, or Advant Controller 400 Series.

2.3.1 Advant Station 100 Series Engineering Station

Advant Station 100 Series Engineering Station consists of

- A portable personal computer designed for industrial environment
- In case of
  - Advant Station 120 Engineering Station,
    the Advant Station 100 Series Engineering Board – PCI
  - Advant Station 130 Engineering Station,
    the Advant Station 100 Series Engineering Board – ISA
- The engineering software AMPL Control Configuration including the options On-line Builder and AMPL PC and DB Element Libraries.

For detailed information see Chapter 10 References, reference 1.

2.3.2 Engineering Board PU516 (PCI)

Engineering Board PU516 is based on PCI technology and is an add-in board of high complexity designed for use in personal computers. It is a high performance microcomputer that executes the major part of the On-line Builder commands, controls the communication to the target systems and shares the peripherals of the engineering station, such as the display and the keyboard.

Engineering board PU516 is equipped with:

- A 32-bit microprocessor, Motorola MC68040
- 16 MByte RAM
- Interrupt logic which allows immediate processing of internal or external signals by the processor
- Clock circuits
- Supervision functions
- Two communication channels
  - MasterBus 300
  - High speed serial line

The dimensions of the engineering board are

4.2” x 12.283” (106.68 mm x 312 mm).

2.3.3 Engineering Board DSPU131 (ISA)

Engineering board DSPU131 is based on ISA technology and is a high performance microcomputer that executes the major part of the On-line Builder commands, controls the communication to the target systems and shares the peripherals of the engineering station, such as the display and the keyboard.

Engineering board DSPU131 is equipped with:

- A 32-bit microprocessor, Motorola MC68020
- 4 Mbyte RAM
- Interrupt logic which allows immediate processing of internal or external signals by the processor
- Clock circuits

- Special monitoring functions
- One high speed serial line communication channel.

The dimensions of the engineering board are:

AT size, long, XT high: 107.5 mm x 334.6 mm.

2.4 Software Products

AMPL Control Configuration together with the options On-line Builder and AMPL PC and DB Element Libraries—the engineering software under Windows NT—will be delivered on CD-ROM, only. The software products are described in Chapter 10 References, reference 1, or references therein.

The software of the host personal computer—first of all the operating system—is delivered on both CD-ROM and diskettes. This software, as well as the personal computer as a hardware system, have their own user documentation.

2.5 Tools You Need

To install the Advant Station 100 Series Engineering Board, you need a set of screwdrivers. Consult also the user documentation of your personal computer whether you need some other tools, for example, to open its cover or the lid to its board cage.

3 Preparation of Your Personal Computer

The Advant Station 100 Series Engineering Board is used as add-in board in Advant Station 100 Series delivered by ABB Automation Products GmbH. ABB Automation Products GmbH recommends to order the complete engineering station.

Nevertheless, the engineering kit can be applied with other AT-compatible personal computers, too. **While all reasonable efforts have been made to make certain that the engineering board works on all computers meeting these specifications, responsibility for compatibility in each individual case cannot be assumed.**

If you want to work on-line connected to a target system or an industrial process, your personal computer and its peripherals must fulfill high mechanical, temperature and electrical requirements, as stated in the Advant OCS Product Guide, chapter Environmental Immunity.

If you use another personal computer than Advant Station 100 Series Engineering Stations, the following requirements serve as criteria for selection of personal computers. Several Advant Station 100 Series software products have more stringent hardware and software requirements.

3.1 Hardware Requirements

DANGER

If an own suitable personal computer is intended to be connected on-line to a target system or an industrial process, it has to fulfill, together with the built-in Advant Station 100 Series Engineering Board and its peripherals, all requirements listed below under “Alternative 1”.

Depending on the environment in which it shall be used, an own suitable personal computer has to fulfill the following requirements:

Alternative 1. On- and off-line use in industrial environment

The personal computer has to fulfill the requirements stated in the section “Environmental Immunity” of the Advant OCS Product Guide and the following standards:

–	EN 50081-1	EMC, Emission
–	EN 50082-2	EMC, Immunity
–	EN 60950	Electrical safety

Alternative 2. Only off-line use in residential, commercial and light industrial environment; on-line use is not permitted

The personal computer has to fulfill the following standards:

–	EN 50081-1	EMC, Emission
–	EN 50082-1	EMC. Immunity
–	EN 60950	Electrical safety

Further requirements concerning personal computers that carry an Advant Station 100 Series Engineering Board are the following:

- IBM PC compatible, with at least 90 MHz Pentium CPU
- At least 32 MByte RAM, 64 MByte RAM recommended
- CD-ROM drive for installation of software

- At least 2 GByte hard disk
- At least a VGA graphics adapter; 1024 x 768 resolution recommended
- One port for mouse or trackball connection
- One serial communication port for Advant Controller 100 Series connection
- One parallel or serial port for the printer, unless printing via network.

Further requirements in case of engineering board PU516 (PCI):

- One free PCI expansion slot, full length
- Power requirements for the engineering board PU516:
  - +5V 13W, +12V 1.5W without connection to MB300 transceiver
  - +5V 13W, +12V 7.5W when connected to MB300 transceiver.

Further requirements in case of engineering board DSPU131 (ISA):

- One free ISA expansion slot, AT size long and XT high
- Power requirements for the engineering board DSPU131:
  - +5 V 1.6 A, +12 V 25 mA, -12 V 25 mA.
- Free ISA memory from C800H:0H to CBFFH:FH for the engineering board DSPU131:
  - Make sure that the BIOS of this personal computer allows ISA boards to use the memory area C8000-CBFFF.
  - The memory area at C8000-CBFFF must not be occupied by any other hardware.
  - The memory area at C8000-CBFFF must not be cashed, shadowed, swapped, or moved by the BIOS.
- 4 bytes free I/O space at address 320H for the engineering board DSPU131.

Remark: Engineering board DSPU130 (the predecessor of DSPU131) required one free AT size long and AT high ISA expansion slot.

PCI Bus Settings in BIOS Setup

If you use a host computer with PCI bus you need the following settings for the Advant Station 100 Series Engineering Board – ISA:

• ISA Memory Block Base (address):	C800
• Size:	16 KByte

For the climatic, mechanical environmental conditions and for resistance to electrical interferences see Chapter 10 References, reference 2, Chapter Environmental Immunity. Please check the hardware configuration of your personal computer, consult its user’s manual and delivery documents.

NOTE

While all reasonable efforts have been made to make certain that the engineering board works on all computers meeting these specifications, responsibility for compatibility in each individual case cannot be assumed. The only way to make sure that the engineering board is running in your personal computer, is to test the personal computer together with the board.

3.2 Requirements on System Software of the Host PC

Run your host computer with the operating system Windows NT 4.0.
Please, check the system software of your personal computer, consult its user’s manual and delivery documents.

Install the operating system on the personal computer if it has not been installed yet as described in its user’s manual.

You normally use the engineering board with the On-line Builder.
For requirements concerning Windows NT and its Service Packs,
see *On-line Builder Release Notes*.

4 Installation of the Engineering Board

4.1 Handling of the Board

The Advant Station 100 Series Engineering Boards contains electronic components sensitive to static electricity. Make sure you are discharged of static electricity before handling the board. Please keep it in its original plastic envelop. During unpacking and installing please handle it by its metallic rear panel where connectors are mounted. See Figure 4-1 for connectors of the Advant Station 100 Series Engineering Board – ISA and Figure 4-2 for the connectors of Advant Station 100 Series Engineering Board – PCI.

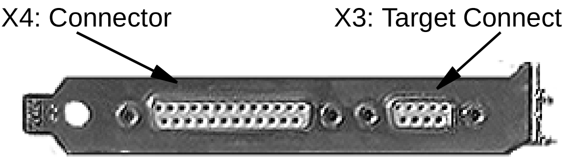

Figure 4-1. Connectors of Engineering Board – ISA

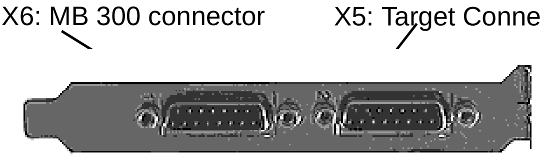

Figure 4-2. Connectors of Engineering Board – PCI

4.1.1 Settings for the Engineering Board – ISA

Set DIP-Switch

The Advant Station 100 Series Engineering Board – ISA has a DIP-switch that determines the AT bus I/O-address used by the board (see Table 4-1).

Switch	**Default Position**	**Address Bit**	**Default Value**
Dip 1	CLOSED or ON	ADDR2 2^2	0
Dip 2	CLOSED or ON	ADDR3 2^3	0
Dip 3	CLOSED or ON	ADDR4 2^4	0
Dip 4	OPEN or OFF	ADDR5 2^5	1
Dip 5	CLOSED or ON	ADDR6 2^6	0
Dip 6	CLOSED or ON	ADDR7 2^7	0
Dip 7	OPEN or OFF	ADDR8 2^8	1
Dip 8	OPEN or OFF	ADDR9 2^9	1

Table 4-1. Dip Switch Positions

The default position corresponds to the default I/O address 320h.

The setting of the DIP-switch has to agree with the default position given in Table 2 unless you have to use a special I/O address to avoid address conflicts within your PC configuration.

When you change the setting, the engineering software must be informed about that.

Set I/O address under Windows NT

Start Engineering Board Setup as follows:

Start | Advant | Engineering | Utilities | Engineering Board Setup <version>

for example:

Start | Advant | Engineering | Utilities | Engineering Board Setup 2.7-0

Within the setup’s dialog you can specify the I/O address for the local engineering board.

4.2 Opening up Your Personal Computer

To prepare your PC for installation

- Remove the diskettes, if there is any, from the drives.
- Switch off the PC.
- Disconnect the power cable from the PC.
- Switch off the peripherals of the PC (display, printer etc.).
- Disconnect the interface cables of peripherals from the PC (display, printer, eventually keyboard etc.).

DANGER

Before opening up your PC make sure it is switched off and disconnected from the mains. Wait for discharge of high voltage capacitors in your PC.

Never operate the personal computer with its cover removed!

Remove the cover of your PC as described in its user’s manual to get access to its expansion slots.

4.3 Installing the Engineering Board in Your PC

You will find in the opened board cage of your PC one or more free expansion slots. Please choose one slot fit to accept the board:

- The Engineering Board – ISA is a long board with AT bus connection (a 62-pole and a 36-pole direct board connector).
- The Engineering Board – PCI is a long board with PCI connection

In case of doubt consult the user’s manual of the PC.

In Advant Station 130 only one ISA slot is available.

With an appropriate screwdriver remove the (blind) slot cover at the outer end of the slot.

Slide the Advant Station 100 Series Engineering Board into the free slot along the slide guides of the slot if there are any.

Push the Advant Station 100 Series Engineering Board into the two direct connectors of the slot so that its metallic rear panel fits into the place of the removed slot cover. Make sure that the electronic components of the Advant Station 100 Series Engineering Board and its neighboring boards in the cage do not touch each other.

They normally have a distance of more than 5 mm between them. Secure the Advant Station 100 Series Engineering Board to the chassis of the PC with the removed screw.

In case of Advant Station 120 Engineering Station see also the *IP Lite User Manual* for a description to install a card into the PC.

In case of Advant Station 130 Engineering Station see also the *IN Lite User Manual* for a description to install a card into the PC.

4.4 Removing the Engineering Board from Your PC

With an appropriate screwdriver remove the screw fixing the Advant Station 100 Series Engineering Board by its metallic rear panel at the outer end of the slot.

Pull the Advant Station 100 Series Engineering Board out of the two direct board connectors of the slot handling it by its metallic rear panel. Slide it out of the expansion slot.

Put the Advant Station 100 Series Engineering Board back into its original plastic envelop. It has to be stocked and transported only in its original packaging. Fix the earlier removed (blind) slot cover on its place with its screw.

4.5 Closing Your Personal Computer

Replace the cover of your PC as described in its user’s manual. Connect the interface cables of peripherals (display, printer, eventually keyboard etc.) to the PC. Connect the power cable to the PC.

CAUTION

When using your PC and its peripherals as part of Advant Station you should power them only from the mains socket of the target Master cubicle.

Switch on the PC and the peripherals (display, printer etc.). The operating system will normally start.

4.6 Configuring Your Personal Computer

Before you can start working with the On-line Builder you shall configure the system.

PCI Bus Settings in BIOS Setup:

If you use an host computer with PCI bus you need the following settings for the Advant Station 100 Series Engineering Board – ISA:

- ISA Memory Block Base (address): C800
- Size: 16 K

5 Using the Functional Test Program

5.1 Purpose of the Functional Test

This test is not necessary for the Advant Station 100 Series Engineering Board – PCI.

The Advant Station 100 Series Functional Test facilitates you to check your Advant Station 100 Series Engineering Board – ISA any time.

It helps to detect trivial installation errors or some errors due to the host PC configuration. Successfully passing the test finishes the hardware installation. Then you can go on with installing the Advant Station 100 Series software products.

The Functional Test can be valuable also when consulting our Service about an eventual problem during the normal use of the engineering station.

These tests cover the Advant Station 100 Series Engineering Board environment and the board itself. They are structured so that the functional units of the board are stepwise tested from the simplest and basic ones to the most sophisticated ones, from the host towards the inside of the board. An easy-to-use communication—in English or German—and the permanent log function completes the features of this software.

For more information see Chapter 10 References, reference 3.

5.2 Installing and Running the Functional Test Program

The Advant Station 100 Series Functional Test is delivered as part of On-line Builder, and is applicable for the Advant Station 100 Series Engineering Board – ISA.

For detailed information on installation and operation of this test please consult the Advant Station 100 Series Engineering Board, Functional Test Guide.

Do not start up On-line Builder functions until the Functional Test has qualified the Advant Station 100 Series Engineering Board – ISA “okay” in your host personal computer.

6 Software Products

6.1 About Advant Station 100 Series Software

The Advant Station 100 Series software products are program packages that feature the configuration, application, test and commissioning functions for your ABB Master system. They are delivered on CD-ROM labelled with title and ABB identity number for identification. The versions of the products on the CD-ROM can be found in the booklet.

6.2 Installing and Running the Software

For detailed information on installation and operation of the Advant Station 100 Series software products please consult the *User's Guides* of these products or the *Release Notes*, the latter included as *Relnotes.pdf file on the AdvaBuild Engineering Software CD 1.

7 Maintenance

The Advant Station 100 Series Engineering Boards do not need any maintenance.

The host personal computer may need some periodical maintenance, such as cleaning of air filters etc. Please, follow the instructions in the user’s manual of your personal computer.

8 Appendix A Guarantee and Software Licence

Conditions of guarantee on the Advant Station 100 Series Engineering Board and conditions of software licence on the Advant Station 100 Series software products are part of and defined in PRICES and QUOTATIONS.

The responsibility in ABB Automation Products GmbH products, systems and installations is stated in accordance with General Conditions, United Nations Economic Commission for Europe, No 188, with Addendum issued by ABB and with the Appendix to PRICES and QUOTATIONS.

ABB Automation Products GmbH permits sales of the
Advant Station 100 Series Engineering Board by subsidiaries with a 12 month guarantee (for ECE 188, App. G).

The guarantee is valid for properties of the Advant Station 100 Series Engineering Board in itself and its application in Advant Station 100 Series Engineering Stations delivered by ABB Automation Products GmbH.
ABB Automation Products GmbH is explicitly not liable for damages occurring in and due to a host personal computers or their extensions when using the Advant Station 100 Series Engineering Board out of its specification with them.

ABB Automation Products GmbH grants to the purchaser a nonexclusive right to use the Advant Station 100 Series software products. This right is limited for the normal operation of the products and for the lifetime of the products.

For detailed conditions of guarantee and of the licence to use Software see PRICES and QUOTATIONS.

9 Appendix B Board Connectors

Connectors of the Advant Station 100 Series Engineering Board – ISA:

- X 3 Target Connector, a 9-pin D-type female connector (Table 9-1)
- X 4 Connector, a 25-pin D-type female connector (Table 9-2)

Connectors of the Advant Station 100 Series Engineering Board – PCI:

- X 5 Target Connector, a 15-pin D-type female connector (Table 9-3)
- X 6 MB 300 Connector, a 15-pin D-type female connector (Table 9-4).

Pin #	Signal Name	Interface
1	Shield	
2	–	
3	TXDA	RS 232C
4	RXDA	RS 232C
5	GND	
6	–	
7	PD	RS 422
8	PD–N*	RS 422
9	–	

Table 9-1. X 3 Target Connector

Pin #	Signal Name
1	Shield
2	TXDB
3	RXDB
4	RTS
5	CTS
6	DSR
7	GND
8	RLSD
9 ...19	–
20	DTR
21	–
22	RI
23 ... 25	–

Table 9-2. X 4 Connector

Pin #	Signal Name	Interface
1	–	
2	TXD	RS232
3	–	
4	0VCOM	
5	PD	RS485
6	0VCOM	
7	–	
8	–	
9	RXD	RS232
10	–	
11	0VCOM	
12	PD_N	RS485
13	–	
14	–	
15	–	

Table 9-3. X 5 Target Connector

Pin #	Signal Name	Interface
1	GND	IEEE802.3
2	COLL+	
3	TX+	
4	GND	
5	RX+	
6	GND	
7	–	
8	–	
9	GND	
10	COLL-	
11	TX-	
12	GND	
13	RX-	
14	+12V	
15	GND	

Table 9-4. X 6 MB 300 Connector

10 References

1 Advant Station 100 Series Engineering Station User’s Guide

2 Advant OCS with Master Software Overview Product Guide

3 Advant Station 100 Series Engineering Board; Functional Test Guide, 3BDD000 009R0501

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